

between the completion of the drench and the administration of the nitrite-thiosulphate combination the sheep recovered. A longer interval was followed by death. As methylene blue has been recommended as a remedy, for purposes of comparison 4 sheep were treated with 50 c.c. of 1 per cent solution intraperitoneally at 4, 5, 7, and 7 minutes after the completion of the drench and all died.

#### SUMMARY

The combination of 1 gram sodium nitrite and 2 grams of sodium thiosulphate used as a remedy in cyanide poisoning is effective when administered promptly. The combination protected when injected intraperitoneally within 4 minutes after drenching an average sized sheep with 1.5 m.l.d. of potassium cyanide, but did not protect after a longer interval except in the cases of unusually resistant sheep. One half of a gram of methylene blue in solution similarly administered did not protect in 4 minutes. Three sheep out of 19 showed atypical behavior when poisoned with the cyanide.

ZOOLOGY.—*A new species of Oochoristica from a skunk.*<sup>1</sup> MARY SCOTT SKINKER, Bureau of Animal Industry. (Communicated by E. W. PRICE.)

Members of the genus *Oochoristica* are found in a wide range of vertebrate hosts, but they occur most frequently in reptiles. Meggitt (1934) gave a comparative table of most of the species of the genus; he did not include 5 species described by Harwood (1932) or *O. parva* (Sandground, 1926) Meggitt, 1934. He explained that the omission of *O. parva* was due to the fact that no description was available, and it is probable that none was available for the species described by Harwood. The description of *O. thapari* Johri, 1934 from *Calotes* sp. has been published since Meggitt's paper appeared. Of the species included in Meggitt's table, 5 (including *O. parva*) are from carnivore hosts. These 5 species and the one described in this paper represent the known species from carnivores; a comparative table of these is included.

Family ANOPLOCEPHALIDAE Cholodkowski, 1902

Subfamily LINSTOWINAE Fuhrmann, 1907

Genus OCHORISTICA Luehe, 1898

*Generic diagnosis.*—Genital pores usually unilateral, only infrequently irregularly alternating. Genital ducts passing between or dorsal to longitudinal excretory vessels. Longitudinal excretory vessels variable in number,

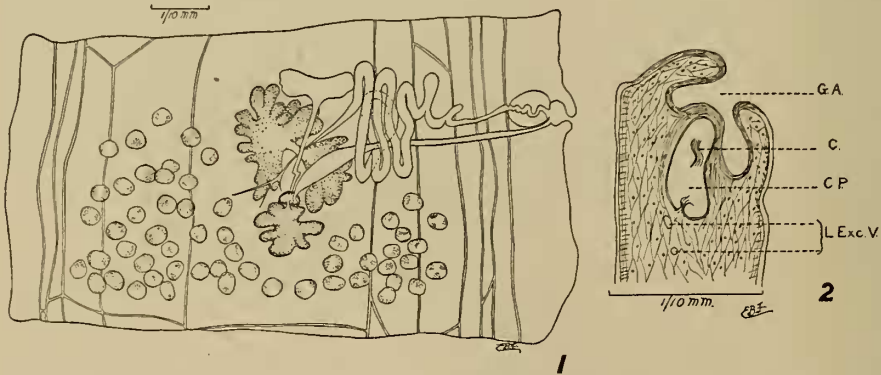
<sup>1</sup> Received November 6, 1934.

frequently with secondary ramifications. Testes numerous, i.e., usually more than 10. Female reproductive organs median; uterus a transverse tube breaking up into egg capsules, each containing a single egg. Adults in primates, carnivores, insectivores, edentates, marsupials, and reptiles; larval stages unknown.

*Oochoristica mephitis*, n. sp.

*Scolex*.—Maximum diameter  $429$  to  $689\mu$ ; suckers usually somewhat longer than wide; only rarely circular in outline,  $159$  to  $220\mu$  long by  $130$  to  $183\mu$  wide.

*General anatomy of strobila*.—Length of gravid strobila  $11$  to  $25$  mm.; width usually variable, up to  $1.3$  mm. Neck (unsegmented region) present or absent according to state of contraction, if present usually only slightly



Figs. 1-2.—*Oochoristica mephitis*. Fig. 1.—mature segment. Fig. 2.—Region of genital atrium. Drawn from cross section. C., cirrus; C. P., cirrus pouch; G. A., genital atrium; L. Exc. V., longitudinal excretory vessel.

narrower than greatest diameter of scolex. Segments about 40 to 70 in number in strobilae with fully developed oncospheres; immature segments 20 to 40 in number, the posterior 5 to 10 segments showing only testes (i.e., ovary not yet developed); fully mature segments 2 to 10 in number, usually about 3, these usually widest of strobila; gravid segments 7 to 23 in number, usually narrower than mature segments and usually longer than wide, sometimes approximately square; in a specimen  $11$  mm. long, gravid segments  $715\mu$  square. Genital papillae about one-third segment length from anterior margin in mature segments, usually in middle of segment margin in gravid segments. Genital atrium (Fig. 2) conspicuous, variable in shape, usually about  $35$  to  $40\mu$  in greater diameter. Longitudinal excretory canals inconspicuous and difficult to demonstrate in whole mounts, variable in number and arrangement, usually 4 to 6 (Fig. 1) on each side, most laterally situated canals usually about  $110\mu$  from segment margin; transverse canals irregular in arrangement (Fig. 1) but tending to form a somewhat definite posterior canal in each segment. Longitudinal muscular layer poorly developed; transverse muscles scattered, few in number. Calcareous corpuscles few in the material available.

*Male reproductive system*.—Testes 44 to 77 in number, sometimes slightly oblong, size varying with stage of development, actively functioning testes up to about  $40\mu$  in greater diameter, distributed posterior and lateral to

ovary with tendency toward distribution in two groups in mature segments, poral group smaller, testes not extending laterad beyond most lateral excretory canal. Cirrus pouch usually extending nearly to most lateral longitudinal excretory canal, usually approximately spherical,  $55$  to  $65\mu$  in diameter, sometimes slightly greater in the diameter which lies along transverse axis of strobila. Vas deferens without coils in early development, in wide coils in mature segments, sometimes disappearing abruptly in early gravid segments, usually still visible in terminal segments, passing along the middle of ventral surface of ovary.

*Female reproductive system.*—Ovary at first distinctly bilobed, later variable in shape, but with tendency toward crescentic outline. Oviduct (Fig. 3) passing from middle of posterior margin of ovary to vagina, surrounded

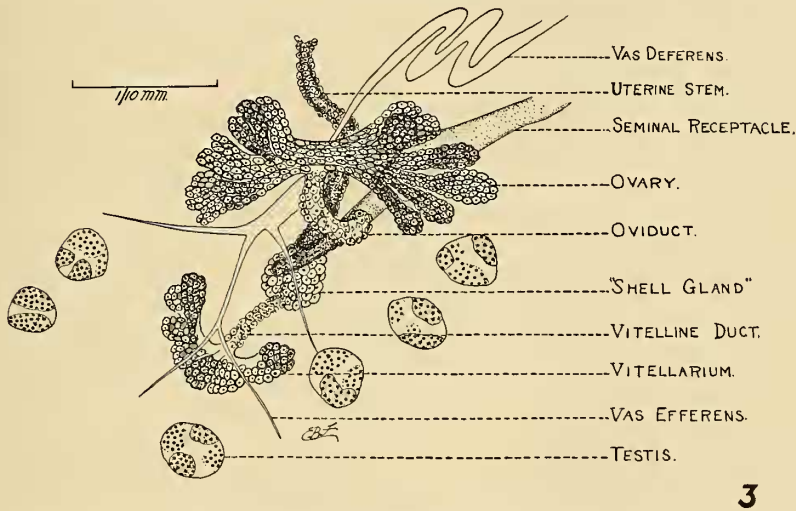


Fig. 3.—*Oochoristica mephitis*. Details of median reproductive organs. Ovary not fully developed.

by large nucleated cells. Vitellarium at first crescentic in outline, later usually irregular in outline, composed of numerous lobules made up of cells slightly smaller than those of ovary; vitelline duct surrounded by large nucleated cells. "Shell gland" (Fig. 3) approximately globular in shape, composed of (or surrounded by?) large cells. In a gravid specimen 11 mm. long with about 40 segments, other measurements as follows: Typical mature segment 1.23 mm. wide by 0.65 mm. long; ovary about  $192\mu$  long and  $192\mu$  wide; shell gland about  $40\mu$  in diameter; vitellarium about  $92\mu$  in diameter. Ovary not developing until after testes are well developed; ovary then developing rapidly and disappearing abruptly at appearance of first eggs in uterus. Uterine stem passing from "shell gland" along longitudinal axis of segment to a point approximately parallel to anterior edge of ovary, surrounded by relatively large nucleated cells; with further development, uterine stem (Fig. 3) bifurcating anteriorly and forming a transverse tube, the tube eventually breaking down and egg capsules filling entire segment. Vagina without coils, opening posterior to opening of cirrus sac. Seminal receptacle conspicuous, about  $145\mu$  to  $185\mu$  long by  $43\mu$  to  $50\mu$  in maximum width, dorsal to poral lobe of ovary, frequently visible along with vas def-

TABLE 1.—THE SPECIES OF OOOHORISTICA FOUND IN CARNIVORES

Species	Length (in mm.)	Width (in mm.)	Diameter of scolex (in $\mu$ )	Diameter of suckers (in $\mu$ )	Length of cirrus pouch (in $\mu$ )	Extent of cirrus pouch	Testes, number and arrangement	Seminal receptacle	Diameter of egg (in $\mu$ )	Relation of genital ducts to excretory vessels	Hosts and locality
<i>amphisbeteta</i> Meggitt, 1924	15- 40	0.45- 0.50	210	165	111	Beyond lateral excretory vessel	22-24; posterior to ovary	Absent	30	Between; dorsal to nerve	<i>Herpestes auropuncatus</i> (Hodgson, 1836); India.
<i>herpestis</i> Kofend, 1917	60	3	290	—	220	To ventral excretory vessel	50-60; posterior and lateral to ovary; in 2 lay- ers dorsoven- trally	—	57 $\times$ 32	Dorsal	<i>Herpestes sanguineus</i> Rüpp.; Africa (Soudan). <i>Aterix spiculatus</i> (Thomas and Wroughton, 1907), <i>A. spinifer</i> Thomas, 1918; Africa (Nigeria).
<i>ichneumonitis</i> Baer, 1924	100	4	—	—	200	To nerve	99-100; posterior and lateral to ovary, extend- ing beyond ex- cretory vessels; in single layer	Absent	46 (onco- sphere 30)	Dorsal	<i>Herpestes gracilis</i> (Rüpp.) <i>Galerella gracilis</i> (Rup- pell, 1835); Union of South Africa. "Focorius sp." (? Ictonyx sp.); Africa (Rhodesia).
<i>ineisa</i> Railliet, 1899	10- 150	1.3	270- 600	80- 120	100- 130	(No draw- ing avail- able)	23-50; posterior and lateral to ovary	Small	30 (onco- sphere 23 $\mu$ )	Between	<i>Meles meles</i> (Syn. <i>M. ta- xus</i> Schreb.); Europe (France). <i>Crocidura caerulea</i> (Kerr, 1792); Asia.
<i>mephitis</i> n. sp.	11- 25	1.3	429- 689	159- 220 by 130- 183	55- 65	To lateral excretory vessel	44-75; posterior and lateral to ovary, in one ir- regular layer.	Present	30	Dorsal	<i>Mephitis elongata</i> ; United States (Georgia).
<i>parva</i> (Sand- ground, 1926) Meggitt, 1934	1.3- 10.6	650- 750	750	140	90	Beyond lateral excretory vessel	40-60; posterior and lateral to ovary; several between vagina and vas deferens	Present	24 $\times$ 21	Dorsal; ventral to nerve	<i>Nasua socialis</i> ; Brazil.



erens in terminal gravid segments. Eggs, when containing fully developed oncospheres, about  $30\mu$  in diameter.

*Hosts*.—Definitive: *Mephitis elongata*; intermediate: Unknown.

*Location*.—Small intestine of definitive host.

*Distribution*.—United States (Georgia).

*Type specimen*.—United States National Museum No. 32859, collected by Dr. Eloise Cram of the Zoological Division.

*Specific differentiation*.—The present writer considers the number and arrangement of testes, the size of the cirrus pouch and its position with reference to the other genital organs and especially to the excretory canals and nerve, the presence or absence of a seminal receptacle, the type of genital atrium, i.e., whether massive or with relatively little musculature, the relative position of the genital ducts and excretory canals, and the size of the egg the best characters for specific differentiation. *Oochoristica mephitis* may be separated from the other members of the genus by comparison of the species with regard to these characters as shown in Meggitt's table. In some cases such as *O. cryptobothria* (Linstow, 1906) La Rue, 1911 the description is so inadequate as to prevent comparison, but where relatively complete descriptions are given, one or more of the characters listed above will serve to separate all species from *O. mephitis*. The accompanying table gives only the species found in carnivores, and in it *O. mephitis* may be distinguished from *O. amphisbeteta* and from *O. ichneumontis* on the basis of the presence of a seminal receptacle in *O. mephitis*; in *O. amphisbeteta* the testes are distributed lateral to the most lateral excretory canal, whereas in *O. mephitis* no testes lie outside the most lateral excretory canal. *O. herpestis* is a much larger worm than *O. mephitis* and the eggs also are larger. The conspicuous seminal receptacle in *O. mephitis* separates it from *O. incisa* which, according to Baer (1927), has only a very small one, and in *O. incisa* the genital ducts pass between the excretory vessels, while in *O. mephitis* they pass dorsal to the excretory vessels. *O. parva* may be distinguished from *O. mephitis* by the testes in the former having a distribution (see table 1) quite unlike that in the latter, and by the cirrus pouch in the former extending well past the excretory vessels; the musculature of the genital atrium of the former also serves to differentiate it from other species. Meggitt (1934) pointed out that the number of testes and the size of the cirrus sac vary, and should, therefore, be regarded as not infallible specific characters. The present writer finds that an accurate count of testes can be made only in young segments before the testes have developed to a size which results in crowding. In *O. mephitis* the writer does not find the variation in the size of the cirrus pouch greater than the normal limits of variation for such a character. It is, therefore, considered a relatively constant character. Meggitt cautioned against accepting unquestioningly the measurements of eggs and oncospheres since they vary according to the medium in which the eggs are measured. The measurements here given are for eggs mounted in balsam.

The characteristic appearance of these specimens is that of thin, nearly translucent worms, with the width usually greatest in the region of the mature segments, and the transition from mature segments to gravid segments so rapid as to seem abrupt.

*Discussion of table 1.*—Meggitt (1934) considered *O. amphisbeteta* Meggitt, 1924 a synonym of *O. erinacci* Meggitt, 1920, but in the opinion of the present writer both these specific names are probably synonyms of *O. incisa* Railliet, 1899. Joyeux (1927) considered *O. incisa* very similar to *O. erinacei* and described the egg capsules of *O. erinacei* var. *rodentium* as  $45\mu$  in diameter with the oncosphere  $23\mu$  by  $17\mu$ . Marotel (1899) described the egg capsules of *O. incisa* as  $45\mu$  in diameter and the egg itself as  $35\mu$  by  $22\mu$  with the hooks of the embryo as  $17\mu$  long. Meggitt (1934) did not give the egg size of either *O. erinacei* or *O. amphisbeteta*. Baer (1927) gave the diameter of the eggs of *O. erinacei* as  $15\mu$ , and that of the eggs of *O. amphisbeteta* as  $30\mu$ . With such conflicting data it is difficult to come to any conclusion other than that the measurement "15 $\mu$ " given by Baer is probably a typographical error. The number of testes recorded by Meggitt (1924) for *O. amphisbeteta* is 22 to 24 and for *O. erinacei* is 30 to 50, but it is probable that these were counted in mature segments only, and judging from the variation found by the present writer in young segments of *O. mephitis* in which the testes could be accurately counted, variations from 22 to 50 is not beyond specific limits. It is on the authority of Baer (1927) that *O. amphisbeteta* is described as being without a seminal receptacle and *O. incisa* as having a small one. It seems quite possible, since Meggitt fails to state definitely that the seminal receptacle is absent in *O. amphisbeteta*, that a small one may be present but demonstrable only in sections or in well extended segments. However, Meggitt described *O. erinacei* as being without a seminal receptacle, and since he later came to regard *O. amphisbeteta* as a synonym of *O. erinacei* for the present both species must be considered as lacking this structure.

The specimens of *O. incisa* which were but 10 mm. long were regarded by Baer as a *forma minor*.

The massive musculature of the genital atrium of *O. parva* (Sandground, 1926), Meggitt, 1934, appears to be a specific character which would serve to separate this species from other members of the genus. The specific name *parva* was proposed by Baylis (1929) for a member of the genus *Oochoristica*, but when *Atriotenia parva* Sandground, 1926 was identified as belonging to the genus *Oochoristica*, it created the necessity of renaming *Oochoristica parva* Baylis, 1929. Dr. Baylis has suggested, in correspondence which the present writer had with him, that if necessary *Oochoristica parva* Baylis, 1929 be renamed *Oochoristica lygosomatis*, and he indicated his willingness to have the new name published by anyone in a position to express a definite opinion that Sandground's species is a member of the genus *Oochoristica*. Since *Oochoristica parva* (Sandground, 1926), Meggitt, 1934 possesses no

characters which serve to separate it from the genus *Oochoristica*, the present writer proposes the new name *O. lygosomatis* for *O. parva* Baylis, 1929.

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ZOOLOGY.—*A new species of amphipod of the genus Grandidierella and a new record for Melita nitida from Sinaloa, Mexico.*<sup>1</sup> CLARENCE R. SHOEMAKER, U. S. National Museum. (Communicated by MARY J. RATHBUN.)

In 1923 Mr. W. E. Chapman, American Consul, at Mazatlan, Sinaloa, Mexico, sent some amphipods to the U. S. National Museum which were taken by Mr. Harry Notton in connection with the shrimp investigations which he was carrying on at Mazatlan. The material contained two species, *Melita nitida* Smith, which is reported for the first time from the west coast of America, and a species that I believe to be new to science and which I designate as *Grandidierella nottoni*.

## GRANDIDIERELLA Coutière, 1904

The first species of this genus, when described by Giles in 1888, was placed in the genus *Microdeutopus* with which it, however, did not agree by the possession of a uniramous third uropod. Coutière in 1904, when he described his new species, *mahafalensis*, created the genus *Grandidierella* to receive it, and considered its affinities closer to the *Coroppiidae*, in which family he placed it. Coutière, and later Stebbing in 1908, called attention to the close alliance of *Grandidierella* with both *Unciola* and *Chevreuxius*, and Stebbing placed his new species, *G. bonnieri*, in the *Coroppiidae*. Chilton (1921, p. 549) said, "The

<sup>1</sup> Published by permission of the Secretary of the Smithsonian Institution. Received December 8, 1934.